## PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.
November 27, 1855.-Dr. Gray, F.R.S., in the Chair.

## On Panopea Aldrovandi, Lam.

By S. P. Woodward, F.G.S.
The specimen of Panopea Aldrovandi, preserved in spirits, and now exhibited to the Zoological Society, was presented by Capt. Guise to the Gloucester Museum, and was lent me for examination through the kindness of J. W. Wilton, Esq., of Gloucester.


Panopea Aldrovandi, Lam.
(Chama glycimeris, Aldr.) One-fourth natural size.
$a, a^{\prime}$, Adductor muscles.
$\boldsymbol{p}, \boldsymbol{p}^{\prime}$, Pedal muscles.
$r$, Position of renal organ.
$t$, Labial tentacles, or palpi.
b, Body.
$f$, Muscular foot.
$m$, Pallial muscle, or retractor of the mantle.
$s$, Siphonal muscle.
The arrows indicate the inhalant, or branchial siphon, and the exhalant or anal siphon, communicating with the channels above the gills.

This species is found at Sicily, and on the south coasts of Spain and Portugal ; but not, so far as we are aware, at Mogador or the Canaries.

On the coast of Sicily, according to M. Philippi, it is rare, and only found between La Trezza and Aci Castello. M. H. Crosse, who purposely visited this locality, found a rocky beach in which it could not possibly live, and the only spot where the fishermen were acquainted with it was the village of Giardini, near the sandy bay of Taormina; even there only odd valves were procured, and he says it would be exceedingly difficult to obtain the animal on account of the absence of tides*.

Capt. Guise has favoured me with the following note:-
"The Panopra was collected, together with many of the rarest forms of Mediterranean Mollusca, by the Rev. L. Larking, on the coast of Sicily ; the animal, when alive in a vessel of sea-water, was a most lively mollusk-slashing its siphons about, and discharging the water with the force of a piston."

There appears to be no description of the animal published. Philippi had not seen it, nor Valenciennes, at the time he wrote the monograph of the genus for Chenu's 'Conchological Illustrations.' Being the type of the genus Panopaea, I was the more desirous of examining it, especially as British naturalists have taken their notion of Panopaa from the British shell called "Panopaa Norvegica"which it now appears does not belong to the genus, or even to the same family, but must be referred to Saxicava amongst the Gastrochanida.

In $P$. Aldrovandi all the visible portion of the mantle and the long united siphons are clothed with thick, brown epidermis, striped with black, and very much wrinkled by the contraction of the animal in alcohol: it was impossible, without dissection, to see whether the orifices of the siphons were fringed as in Mya. The anterior gape of the shell exhibits an oval space, perforated in the centre by a small pedal orifice, scarcely large enough to admit the little finger.

By lifting up one valve and removing the portion of the mantle within the pallial line, the internal organs were seen and sketched.
The body is large and oval, suspended by four muscles whose attachments are close to those of the adductors; it is truncated in front, where it supports a small finger-like muscular foot ; behind it is produced into a blunt point.

The oral palpi are triangular and pointed, but were probably larger and broader during life ; they are deeply plaited inside, with a plain posterior border.

The gills are two on each side ; the inner gills extend from the base of the respiratory siphon to the palpi, between which they are received; they are deeply plaited, the plaits being in pairs, and the lower edge of the gill is grooved. The inner dorsal margins are not united to the body, so that the dorsal channels are only closed by the apposition of the parts.

The outer gills are simpler in structure, being formed of a single series of vascular loops placed one behind another ; the free edge is not grooved, and the gill terminates in front some way behind the

[^0]inner gill. The dorsal margin of the outer lamina is expanded beyond the line of suspension, and is fixed.

The gills of the opposite sides are united to each other behind the body and to the branchial septum.

The whole structure is closely like that of Mya arenaria, the chief differences being the shortness of the palpi, and the inequality of the gills.

There are nine other reputed recent species of $P$ anopaa.

1. P. abbreviata, Val.; discovered by M. d'Orbigny on the coast of Patagonia between the R. Negro and S. Blas. This shell appears to have been again met with by the U. S. Exploring Expedition, under Commander Wilkes, and is described by Dr. Gould as P. antarctica.
2. P. zelandica, Quoy ; of which an odd valve only was picked up on the beach.
3. P. solandri, Gray ; probably the same as the last.
4. P. australis, G. Sby. (Genera of Shells, pl. 40. f. 2), one of G. Humphrey's shells from New South Wales; of which there is a series in the British Museum, from Tasmania.
5. P. australis, Val. (not Sowerby's).

This species is as large as P. Aldrovandi, and very like it. Being quite distinct from the $P$. australis of Sowerby, it is proposed to call it $P$. natalensis.

It was discovered in the sandy bays of Port Natal, by Capt. Cecile and the officers of the French frigate 'Heroine,' who observed the tubes of the shell-fish projecting through the sand at low water.
"The sailors endeavoured to draw the creature out of its habitation by the tube, but in vain; for the siphons, after offering considerable resistance, in every instance gave way, and often were withdrawn entire, in spite of the grasp of its persecutor. Curious to know the nature of the being which thus escaped them, they dug for it with spades, and at length uncovered the Panopaa buried several feet below the surface of the sand, and gregarions*."
6. Panopea japonica, A. Adams, Zool. Proc. for 1849, p. 170. pl. 6. f. 5. This species, of which the original and unique example is in the Leyden Museum, is much like the fossil P. intermedia of the London clay.
7. Panopea generosa, Gould ; Puget Sound, Oregon. (U. S. Expl. Exped.)
8. Panopea norvegica, Spengler, is found throughout the Arctic seas, from Behring's Straits to Newfoundland, the North Sea and Russian Lapland.

I was so convinced of the affinity of this shell to the Saxicava, that (in my Manual) I placed the latter genus next to Panopaa; it now appears that I should have left it in its former place with Gastrochrena and have removed the Panopaa norvegica to it. The shell differs from Panoprea in having the pallial line broken up or divided

[^1]into a number of separate spots, and the animal has very long tapering gills, prolonged far into the branchial siphon.
9. Panopea middendorffit, A. Adams, Zool. Proc. for 1854, p. 137. Arctic Seas. (Haslar Museum.) Appears to be a variety of $P$. norvegica.

The Geographical Distribution of the genus Panopaa affords an illustration of the rule, or "law," so earnestly investigated by the late Prof. E. Forbes, - that the range of genera, as well as of species, depends in great measure on their geological antiquity; and that when the members of a group are scattered over the greater part of the world, we may expect to find evidence of their existence in the intervening spaces during a former age. M. d'Orbigny describes 139 extinct species of Panopra, commencing in the Permian age, and occurring in every part of the world where secondary or tertiary strata have been found.

> December 11, 1855 - Dr. Gray, F.R.S., in the Chair.
> Characters of Two New Species of Tanagers. By Philip Lutley Sclater, M.A.

## 1. Dubusia auricrissa.

Dubusia cyanocephala? Sclater, P. Z. S. 1855, p. 157.

> D. supra flavescenti-olivaceo-viridis: capite nuchaque caruleis: loris nigris: subtus carulescenti-cinerea: tectricibus subalaribus et ventre imo crissaque cum tibiis vivide aureo-flavis.

Long. tota $6 \cdot 5$, alæ $3 \cdot 6$, caudæ $3 \cdot 0$.
Hab. in Nova Grenada, Bogota.
Obs. Species D. cyanocephalce simillima, sed rostro minore, colore dorsi flavescentiore olivaceo, capitis cæruleo magis extenso, ventre cærulescenti- neque albescenti-cinereo, et tectricibus subalaribus necnon ventre imo crissoque cum tibiis vivide aureo-flavis.

Since compiling the list of Bogota birds, in which I have included this species under the name Dubusia cyanocephala?, I have examined D'Orbigny's types of that bird in the Paris Museum, and find them so different from the present as to lead me to conclude that they are specifically distinct.
The present bird-which must be considered as the representative of D. cyanocephala in the mountain ranges of New Grenada-is common in collections from Bogota. The British Museum contains examples of both the species. Those of D. cyanocephala were procured by Mr. Bridges in Bolivia.

## 2. Iridornis porphyrocephala.

## Tanagra analis, Tschudi in Mus. Berolinensi.

I. supra purpurea, dorso imo et marginibus alarum et cauda viridescentibus: fronte, loris, mento summo et regione auriculari nigris: gutture late et late aureo-flavo: pectore summo purpurascente: ventre viridescente, medialiter rufescenti-ochraceo : ano intense

- for ferruginescenti-castaneo: tectricibus alarum inferioribus viridescentibus : rostro superiore nigro, inferiore albo.
Long. tota $5 \cdot 6$, alæ $3 \cdot 0$, caudæ $2 \cdot 2$.
Hab. in Nova Grenada et rep. Equatoriana.
Obs. Affinis Iridornithi anali, sed capite dorsoque summo purpureis, pectore purpurascente et ventre viridescente facile distinguenda. When at Berlin in 1854 I first noticed a specimen of this Tanager, which is in the Museum there under the name "Tanagra analis, Tschudi." But having just before that had the opportunity of examining type specimens of the latter bird in the collections of Brussels and Bremen, I saw at once that the present was to all appearance a distinct although closely allied species, and accordingly assigned to it a new name in my MS. At Neufchatel I again saw Tschudi's analis (the types described in the Fauna Peruana being contained in the Museum at that place), and I was also so fortunate as to obtain by exchange, through the courtesy of M. Coulon, the Directeur of the Museum there, a duplicate example of that species. Upon comparing this with a skin lately received by Mr. Gould along with other birds from the neighbourhood of Quito, I find the same differences as I had previously noted in the Berlin Museum specimen; and, fortified by a second example, nó longer hesitate to introduce the bird as new to science under the title of Iridornis porphyrocephala.


## February 12, 1856.-Dr. Gray, F.R.S., in the Chair.

> On the Genus Assiminia (Leach). By Dr. J. E. Gray, F.R.S., P.B.S. etc.

In a list of some species of British shells at the end of an arrangement of Mollusca in the 'LondonMedical Repository' for 1821 (vol. xv. p. 239), I noticel a new mollusk under the name of "Nerita (Syncera) hepatica, n. s. The animal of this shell differs from all others of this order by the eyes appearing to be at the end of the tentacula, but I believe that they are placed on a peduncle as long as the tentacula, and the peduncle and tentacula are soldered together."

Dr. Leach, when he examined the animal of this shell, formed it into a genus under the name of Assiminia, and named the species after myself as $\boldsymbol{A}$. Grayana, described under this name at the end of the genus Limnea, in Fleming's 'British Animals,' p. 275 (1828), who observes, "Dr. Leach sent me several years ago a shell from Greenwich marshes, constituting a new freshwater genus, under the title Assiminia Grayana. The lip is thickened on the pillar and reflected over the cavity, but is destitute of the oblique fold, and the lip does not extend over the body whorl. The colour is brown; whorls six in number, conical, regularly increasing in size, glossy, with minute lines of growth. Length about $\frac{2}{10}$ ths of an inch."

In my paper "On the Difficulty of distinguishing certain genera of Testaceous Mollusca by their Shells alone, and on the Anomalies in regard to. Habitation observed in certain species," published in the 'Philosophical Transactions' for 1835, p. 301, I observe: "About
fifteen years since I first observed in the marshes near the bank of the Thames, between Greenwich and Woolwich, in company with species of Valvata, Bithynia and Pisidium, a small univalve shell, agreeing with the smaller species of the littoral genus Littorina in every character both of shell and operculum. Yet this very peeuliar and, apparently, local species has an animal which at once distin-: guishes it from the animal of that genus and from all Ctenobranchous Mollusca. Its tentacula are very short and thick, and have the eyes placed at their tips, while the Littorince, and all the other animals of the order to which they belong, have their eyes placed on small tubercles on the outer side of the base of the tentacles, which are generally more or less elongated. The shell in question and its animal were described and figured by Dr. Leach in his hitherto unpublished work on British Mollusca, under the name of Assiminia Grayana, and as this name has been referred to by Mr. Jeffreys and other conchologists, it may be regarded as established, and that of Syncera hepatica, proposed by myself in the 'Medical Repository,' vol. x. p. 239, will take rank as a synonym. A second species of this genus has lately been made known by Mr. Benson, by whom it was found on the ponds in India. Its shell is banded like that of Littorina 4 -fasciata and several other smaller Littorince, and has been figured in the Supplement to ' Wood's Conchology,' t. 6; f. 28, under the name of Turbo Francesice."

In my edition of 'Turton's Manual,' 1840, p. 88, I characterize the genus thus:-Assiminia: Shell ovate, conical, solid; mouth ovate; tentacles very short, scarcely longer than the tubercles on which the eyes are placed, and united to their side, p. $78, \mathrm{f} .4,5,6$, observing, "the animal differs from Littorina in the apparent position of the eyes, which is an anomaly among the water and Ctenobranchous Mollusea;" and after quoting Mr. Berkeley's description of the tentacula I observe,-" I am inclined to retain my former theory, for if the pedicel of the eye of this genus is minutely examined, it will appear to be formed of two parts united by a suture."

In 1852, having obtained permission of the family, I printed Dr. Leach's 'Molluscorum Britanniæ Synopsis' above referred to, and he there described the genus - "Assiminia. Testa conica, spira mediocris. Animal tentaculis duobus brevibus, apice paulo angustioribus obtusis, ad apicem oculigeris, instructum ; oculi parvi, rotundi ; operculum tenue."
"From the form of the shell this genus might be considered as belonging to the second stirps (testa conica, spira brevis), but the animal proves that it is more nearly allied to Sabanca than to any other of the British genera." (p. 155. t. 9. f. 4, 5.)

Lately some doubt has been attempted to be thrown on the distinctness of the genus; which it has been proposed should be united to the genus Truncatella of Risso.

Considering the very great similarity which often exists in the general appearance of the animals of very distinct genera of Mollusca, -a similarity so great, that if a person was to place before me, without the shell or operculum, the animal of the genera Murex, Triton, Pur-
pura, Fasciolaria, Columbella, \&c., I should not be able to distinguish one from the other without the examination of the teeth or the lingual membrane, and that would only enable me to separate Triton, Cassis and Fasciolaria from each other and from Murex, Purpura and Columbella, and not the three latter genera from each other; and it is the same with the animals of several other orders and families;

Fig. 1.


1. Truncatella truncatula $\beta$.
a. With foot extended, in the act of drawing up the shell.
b. Side view.
c. Seen beneath as crawling up a glass, when the muzzle is exserted.

Fig. 2.



2. Assiminia Grayana.
a. Under side of animal and shell.
b. Side view.
c. Front of foot, showing how the lower lamina of the foot projects beyond the upper.
yet the animals of the two genera Assiminia and Truncatella (see figs. 1 and 2) proposed to be united, are so unlike in general appearance, minute structure and habit, that it is extraordinary that any person should have made the proposal.

I think the best way to show the distinction of these two genera will be to copy, in addition to the extract already given, the figures (see figs. 1 and 2) and descriptions of the animals given in different authors, commencing with Mr. Lowe, who has figured and described the animal of Truncatella in the fifth volume of the 'Zoological Journal, and Mr. Berkeley's description and figure of the animal of Assiminia; then the description of the animal of the Indian species of the latter genus, both printed in the volume above referred to; and, lastly, some extracts of additional peculiarity of the genus Truncatella, observed by Mr. Clark, and published in his work on British Mollusca.

[^2]drica, decollata vel truncato-obtusa; anfractibus distinctis, vel levibus vel transverse costatis. Apertura ovalis, brevis; peritremate continuo. Labrum simplex. Epidermis nulla.
Animal littorale, amphibium, sed revera marinum et branchiis spirans. Ingredienti, discus terminalis proboscidis pro pedis parte antica servit; itaque modo fere larvarum Phalenidarum Geometrarum gradibus alternis incedit. Testa junior, tereti-acuminata, e pluribus anfractibus quam adulta constat ; prioribus in plerisque demum (ut in Hel. Bulimo decollato) defractis, truncata evadit.
"It is now nearly three years (1829) since the acquisition of a single live specimen of Cyclostoma truncatulum, Drap., and a long and continued observation of its animal, convinced me that it was entitled to rank as a distinct genus from any which were then constituted. I had accordingly designated it in my MSS. by the generic name of Herpetometra ; derived from its peculiar manner of crawling. This appellation I had since purposed changing into Truncatella, the very name by which I find the self-same species designated by Risso in his 'Histoire Nat. \&c. de l'Europe Méridionale.' In this work, however, the genus rests, like very many others of the same writer, on most unsubstantial ground, the animal being entirely neglected."
"Assiminia. Berkeley, Zool. Journ. v. 429. t. 19. f. 4.
" Voluta denticulata, Mont. (Carychium Myosotis, Michaud, Compl. de l'histoire de Drapard.), and Assiminia Grayana, Leach, abound under stones in the salt marshes by the Thames at Gravesend. Having an opportunity of examining both in a living state in the summer of 1832 , I was surprised to find manifest indications that both were pulmoniferous, which were confirmed on a minute inspection of the internal structure, as far as perhaps could be expected in such small animals. I was enabled in the former to trace distinctly the course of the vessels, and was decidedly of opinion that the lungs were constructed for the breathing of air unmixed with water. In the other case I was not so successful, though the utmost pains were taken; but as the animal is only half the size, the difficulty was much increased. I am enabled, however, to assert, that I could detect nothing like branchiæ; and what is more to the point, that the vault of the cavity of respiration was traversed by a multitude of minute vessels all tending one way towards a large vessel running down in the direction of the heart, which is exactly the structure in pulmoniferous Mollusca. This, perhaps, will be esteemed as decisive when the external characters of the animal are taken into consideration."

## "Assiminia Grayana.

"Foot broadly obovate, obtuse, composed evidently of two distinct laminæ, the lower projecting beyond the upper, and separated from it by an accurately defined line; above fuscous, beneath olivaceous, shaded with cinereous. Tentacula very short and obtuse, fuscous; eyes at the tips. Muzzle porrected, not truly proboscidiform, deeply notched in front, fuscous, strongly annulated; the edge of the lip paler; on each side is a groove running backwards from the base of
the tentacula, Mantle open behind. Fæces elliptical (as in Cyclostoma). Operculum corneous, ovate, spirally striated. The most remarkable circumstance in this animal is the position of the eyes, at the tips of the tentacula, as in Helix and its allies, and not at the base. It would appear as if there were in reality no tentacula, and only the tubercle common to many Mollusca at the base of the tentacula a little more developed than usual. The shell is so like that of some species of Rissoa, that it is quite surprising that in Dr. Fleming's 'British Animals,' and in Mr. Jeffreys' paper in the 'Linnæan 'Transactions,' it should be placed in, or close to, the genus Limnaea. Dr. Leach seems to have formed his conclusions from an actual inspection of the animal, and consequently made a distinct genus for its reception. In many points the animal resembles very much that of Cyclostoma, and is perhaps a step nearer than that and Helicina, which have the mantle open behind, to the Pectinifera. Its nearest ally, however, amongst the pectiniferous Mollusca I should conceive not to be Rissoa.

The animal and shell are figured in Forbes and Hanley's 'British Mollusca,' iii. 70, t. 71. f. 3, 4, and t. H.H. f. 6.
"Mr. Benson, at page 463 of the same volume of the Zool. Journ., has given the following description of the animal of Assiminia fasciata (Turbo Francesii, Gray, in Wood's Supplement, t. 6. f. 28) : -"Animal: Head with only two short, thick, subcylindrical tentacula, with the percipient points placed at their summits. Snout, like that of Paludina, transversely corrugated and bilobed, or rather emarginate at the centre of the extremity, the lobes rounded. Mantle free, and branchial cavity open. Foot with a spiral horny operculum, angular at the upper part."

I may add to these descriptions that Mr. Clark has lately stated that the tentacula of Truncatella Montagui are "short, flat, broad, triangular, and diverge greatly, scarcely forming an angle of $25^{\circ}$. The eyes are large and black, and have white prominent pupils, which visibly dilate and contract. I have never observed such in any mollusk, though similar ones may have escaped notice; they are placed a little nearer to the base than the middle of their lower half, not on pedicles, but quite flat on the centre of semicircular expansions of the outer side of the tentacles, with an external tendency. The branchial plume is single, of an elongated, kidney-shaped figure, and has the usual constriction or sinus at the end nearest to the heart; it can be detected with high powers in sunlight, through the body volution of pale, clear, thin shells."

The eyes of Truncatella littorea "are precisely those of T. Montagui, and a similar white pupil is a singular coincidence."

[^3]On the other hand, the general form of the animal, the manner of walking, and habitation of the genus Assiminia are so like those of some of the smaller species of Littorina (which Dr. Leach named $S a$ banca), that if it was not for the peculiar position of the eye on its long pedicel I should have been inclined to have considered it as a subdivision of that genus, with very short tentacles and elongated eye-peduncles. But Mr. Berkeley's observations have set that at rest, as well as the distinction between it and Truncatella; for he shows that Assiminia has lungs like Cyclostoma, or rather Helicina, while the Littorince and Truncatella have well-developed gills for respiration, like the greater part of the marine genera; but the gills of Littorina and Truncatella are very unlike one another, the gills of the former being broad, short, laminar, and of the latter, single, ovate, and pectinate.
P.S.-Messrs. H. and A. Adams, in the number of their work issued since this paper was read, are so impressed with the peculiarity of the combination of characters that the animal presents, viz. a pulmonary respiration, spiral operculum, and terminal eyes, that they have formed for the genus a suborder named Prosophthalma, and a particular family, Assiminiada: see Genera of Mollusea, 313.

## MISCELLANEOUS.

## ON CLAUSILIA ROLPHII AND MORTILLETI.

I have lately received the first part of Adolf Schmidt's 'Kritischen Gruppen der Europäischen Clausilien,' containing the groups allied, severally, to Cl. ventricosa, Dr., plicatula, Dr., rugosa, Dr., and to the true gracilis, Rossm., and placing Cl. ventricosa, Rolphii, Leach, and tumida, Ziegl., in the first group, while lineolata, Held, plicatula, \&c. are assigned to the second.

I am also indebted to Mr. Woodward for a further supply of Clausilice found by Mr. Sharman at Charlton in Kent. These all prove to be of the form found by Mr. Prentice at Charlton Kings near Cheltenham, and assigned by A. Schmidt to Cl. Mortilleti, Dumont. Early in June I called M. Schmidt's attention to the fact of his having altogether ignored Cl . Rolphii, as a substantive species, in the Prodromus published in the 'Malak. Blätter' of the present year. It now appears that, after some doubt whether Gray's description did not apply to Cl. lineolata, he had finally arrived at the conclusion that the plate presented a better outline of the form of the shell to which he had referred under the name of Mortilleti, and which he had received from Mr. Prentice, through his brother, from England, where Cl. lineolata had not been detected. Clausilia Rolphii therefore appears as a substantive species, with Cl. Mortilleti as a synonym.

On a review of the single large specimen first received from Mr. Woodward, and which I regarded as the type of Cl. Rolphii (Annals for July 1856, page 75), and on further examination of A. Schmidt's amended characters, remarks and figure, I am disposed


[^0]:    * Journ. Conch. vol. ii. 1851.

[^1]:    * Forbes, i. p. 174, from Valenciennes' Archives du Muséum, t. i. 1839.

    Ann. \& Mag. N. Hist. Ser. 2. Vol. xviii.

[^2]:    '‘1. Truncatella. R.T. Lowe, Zool.Journ. v. 299. t.19. f. 4.
    "'Tentacula ( 2 contractilia) cylindrico-conica, brevia, obtusa, basi distincta, proboscide separata; oculis sessilibus paullo' supra basis angulum externum positis. Caput proboscidiforme exsertum. Os ad extremitatem proboscidis cylindrica, inter tentacula exserta, disciformem, supra emarginatam (sc. bilobam, ob buccas labiales in proboscidem ipsam coadunatas vel commutatas). Pallium collare siphone nullo; orificio ad dextrum corporis ut in Helice, Melampode, Pedipede, \&c. Pes rotundutus vel ovalis, brevis, minimus, posticus. Operculum corneum simplex, i.e. non spirale, ovale, aperturam teste omnino claudens. ${ }^{\text {Th }}$ Testa turrita; adulta cylin-

[^3]:    In conclusion, I may observe, that I regard the general form and organization of the animal and shell of Truncatella as so peculiar, that I have long considered it the type of a peculiar family, characterized by the form of the lips and feet, the mode of walking, the short, broad, diverging tentacles, the position of the eye and its peculiar form, and the truncation of the shell.

